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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/656,695 Confirmation No.: 8571
Applicant(s): Hanewinkel, III et a.
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Art Unit: 3643
Examiner: Swiatek, Robert P.
Title: Aircraft Heat Sink and Electronics Enclosure
Attorney Docket No.: 907A.0146.U1(US)
Customer No.: 29,683

Commissioner For Patents
P.O. Box 1450
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Appeal Brief

Sir:

This is an appeal brief in regard to the final rejection of claims in the above-identified patent application. A Notice of Appeal was mailed to the USPTO on 03/06/2006. The fee under 37 C.F.R. §41.20(b)(2) is enclosed. Please charge deposit account 50-1924 for any fee deficiency.

I. Real Party In Interest

The real party in interest is L-3 Communications Corporation.

II. Related Appeals and Interferences

There are no directly related appeals or interferences regarding this application.

III. Status Of Claims

Claims 1-3, 5-12, 14-20 and 23-28 are pending in this application. Claims 1, 5 and 28 have been rejected by the Examiner. Claims 2, 3, 6-12, 14-20 and 23-27 have been allowed. The rejection of Claims 1, 5 and 28 is appealed.

IV. Status Of Amendments

Since the final rejection of 12/29/2005 no amendments have been filed.

V. Summary of Claimed Subject Matter

An aircraft component, such as an airborne link interface assembly 26 (see paragraph 0021), comprising a first section 62 and a second section 64. The first section 62 is adapted to be attached to an exterior surface 66 of an aircraft to close an access opening 68 through the exterior surface. The second section 64 extends outward from the first section 62 and forms at least one heat transfer surface 70 to transfer heat from the first section 62 to air passing by the exterior surface and the second section (see paragraph 0027).

VI. Grounds of Rejection to be Reviewed on Appeal

- A. Are claims 1, 5 and 28 unpatentable under 35 U.S.C. §102(b) as being anticipated by Reese (US 3,727,059)?

VII. Argument

A. 35 U.S.C. §102(b) - Reese (US 3,727,059)

Claim 1

Claim 1 is direct to an aircraft component. The aircraft component comprises a first section and a second section. The first section is adapted to be attached at an exterior surface of an aircraft to close an access opening through the exterior surface. The second section extends outward from the first section and forms at least one heat transfer surface to transfer heat from the first section to air passing by the exterior surface and second section.

The examiner states that Reese:

"discloses a rectangular component 10 comprising a first section 12 capable of being attached view mounting holes (unnumbered, but shown accommodating bolts 16 in Figure 2 of the patent) through perimeter flanges to an exterior surface of an aircraft to close an access opening therethrough and a second section 14 extending outwardly from the first section and forming at least one heat transfer surface to transfer heat from the first section to air passing by the exterior surface and the second section, with the first and second sections being integrally formed as a metallic one-piece member."

Reese discloses a packaging assembly for transporting radioactive materials. Reese does not disclose or suggest that the packaging assembly is an aircraft component. Reese does not disclose or suggest that first section 12 is adapted

to be attached at an exterior surface of an aircraft to close an access opening through the exterior surface. Reese does not disclose or suggest that second section 14 forms a heat transfer surface to transfer heat from the first section to air passing by the exterior surface of an aircraft. Reese does not "anticipate" the features recited in claim 1, nor are the features recited in claim 1 obvious in view of Reese. The rejection of claim 1 based upon Reese is clearly not appropriate and should be reversed.

The examiner stated that:

"While the Reese component 10 is disposed on the exterior of a container of radioactive material to dissipate heat generated by the material, nonetheless it is deemed to constitute a component of an aircraft inasmuch as ... heat transfer elements are well-known adjuncts of aircrafts."

In the final office action mailed 12/29/2006 the examiner makes reference to Altoz et al. (US 4,273,183) for his "well known" rejection, but is not rejecting the claims based upon 35 U.S.C. 103(a) as being unpatentable over Reese in view of Altoz et al. Merely because heat transfer elements are well-known adjuncts of aircrafts, this does not make it obvious to combine Reese with an aircraft. There is no suggestion to make this combination. The suggestion only comes after reading applicants' patent application.

Even if, for the sake of argument, a rejection of claim 1 under 35 U.S.C. 103(a) as being unpatentable over Reese in view of Altoz et al. was raised, claim 1 is still patentable over this art. First, apart from the teaching from

applicants' patent application, there is no suggestion to combine Reese and Altoz et al. Second, a person attempting to transport radioactive material is not going to locate part of its packaging container on the outside of an aircraft. The safety risks are just too great that damage or a radioactive leak will otherwise occur. Just use some common sense!

In addition, Reese is not analogous art. The Board is directed to MPEP 2141.01(a). The examiner must determine what is "analogous prior art" for the purpose of analyzing the obviousness of the subject matter at issue. In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned.

The examiner has stated that

"Reese is believed to constitute analogous art inasmuch as one seeking to dissipate heat from an aircraft fuselage could turn to the Reese patent, which teaches that a base plate with projecting fins provides optimum heat conduction from a heat source while minimizing weight and eliminating the necessity for cooling liquid."

In the present case, Reese is directed to a container for transporting radioactive materials. Clearly, this is not in the field of applicants' endeavor (aircraft electronics). Likewise, there is nothing in Reese to suggest it is reasonably pertinent to the particular problem with which the inventors were concerned (an aircraft heat sink for

electronics). Reese is clearly not analogous art. Merely because one "could turn to the Reese patent" does not make it analogous art. Reese is not in the field of applicants' endeavor and is not reasonably pertinent to the particular problem with which the inventors were concerned.

The examiner also appears to be ignoring the language "adapted to be attached at an exterior surface of an aircraft to close an access opening through the exterior surface". The examiner's failure to give patentable weight to the term "...adapted to be attached at an exterior surface of an aircraft to close an access opening through the exterior surface" is in error. The examiner must evaluate the claim as a whole. The Board is directed to MPEP §2173.05(g). A function limitation is an attempt to define something by what it does, rather than by what it is. There is nothing inherently wrong with defining some part of an invention in functional terms. A functional limitation **must be evaluated and considered**, just like any other limitation of the claim. In the present case it is clear from the record that the examiner has not be reviewing claim 1 "as a whole". Reese does not disclose or suggest that first section 12 is adapted to be attached at an exterior surface of an aircraft to close an access opening through the exterior surface as recited in claim 1.

Claim 1 is patentable over the cited art and should be allowed.

Claim 5 stands or falls with claim 1.

Claim 28

Claim 28 is dependent upon claim 1. Claim 28 claims that the first section comprises a perimeter flange with fastener mounting holes therethrough. There is no disclosure or suggestion in Reese of a perimeter flange as recited in claim 28. Therefore, claim 28 is patentable and should be allowed.

VIII. Claims Appendix

Attached.

IX. Evidence Appendix

None.

X. Related Proceedings Appendix

None.

Conclusion

In view of the arguments presented above, it is respectfully requested that the Examiner's rejections of Claims 1, 5 and 28 be reversed.

Respectfully submitted,

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail on the date shown below in an envelope addressed to: Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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CLAIMS APPENDIX



1. An aircraft component comprising:

a first section adapted to be attached at an exterior surface of an aircraft to close an access opening through the exterior surface; and

a second section extending outward from the first section and forming at least one heat transfer surface to transfer heat from the first section to air passing by the exterior surface and second section,

wherein the first and second sections are integrally formed as a one-piece member.

2. An aircraft component comprising:

a first section adapted to be attached at an exterior surface of an aircraft to close an access opening through the exterior surface;

a second section extending outward from the first section and forming at least one heat transfer surface to transfer heat from the first section to air passing by the exterior surface and second section, wherein the first and second sections are integrally formed as a one-piece member; and

a heat sink comprising the first and second sections, and wherein a third section is provided at an inward facing side with a connection section adapted to have housing walls attached to the connection section to form a housing for an electronic device.

3. An aircraft component as in claim 2 wherein the aircraft component is comprised of ferromagnetic material to form an electromagnetic interference (EMI) shielding member.

4. (Cancelled)

5. An aircraft component as in claim 1 wherein the at least one heat transfer surface comprises a plurality of heat transfer fins.

6. An aircraft electronic device comprising:

electronic circuitry comprising at least one printed circuit board; and

a housing having the electronic circuitry located in the housing, the housing comprising an aircraft component forming a first housing member and at least one second housing member attached to the aircraft component to form an enclosure housing the electronic circuitry, wherein the aircraft component comprises:

a first section adapted to be attached at an exterior surface of an aircraft to close an access opening through the exterior surface; and

a second section extending outward from the first section and forming at least one heat transfer surface to transfer heat from the first section to air passing by the exterior surface and second section,

wherein the first and second sections are integrally formed as a one-piece member.

7. An aircraft electronic device as in claim 6 wherein the electronic circuitry comprises an airborne microwave modem assembly.

8. An aircraft electronic device as in claim 6 wherein the electronic circuitry comprises digital signal encrypting and compression electronics.

9. An aircraft comprising:

a drive unit;

an air frame comprising at least one airfoil, the drive unit being attached to the air frame; and

an aircraft electronic device as in claim 6 connected to the airfoil.

10. An aircraft as in claim 9 wherein the airfoil is a wing of the aircraft, and wherein the at least one heat transfer surface extends from a bottom side of the wing.

11. An aircraft electronic device comprising:

electronic circuitry which generates heat; and

a housing having the electronic circuitry located in the housing, the housing comprising a first wall member with a heat sink section that extends in an outward direction at an outer side of the first wall member, and a connection section located at an inner side of the first wall member, wherein other walls of the housing are attached to the connection section to form an enclosure housing the electronic circuitry, and wherein the first

wall member further comprises a flange extending from the connection section which is sized and shaped to be attached to an exterior side of an aircraft,

wherein the electronic circuitry comprises at least one printed circuit board, and the housing comprises heat rail and card slot members on opposite sides of the printed circuit board, wherein sides of the printed circuit board are attached to the heat rail and card slot members, and wherein the heat rail and card slot members are attached to the inner side of the first wall member.

12. An aircraft electronic device as in claim 11 wherein the heat sink section comprises heat transfer fins extending in the outward direction.

13. (Cancelled)

14. An aircraft electronic device comprising:

electronic circuitry which generates heat; and

a housing having the electronic circuitry located in the housing, the housing comprising a first wall member with a heat sink section that extends in an outward direction at an outer side of the first wall member, and a connection section located at an inner side of the first wall member, wherein other walls of the housing are attached to the connection section to form an enclosure housing the electronic circuitry, and wherein the first wall member further comprises a flange extending from the connection section which is sized and shaped to be attached to an exterior side of an aircraft,

wherein the electronic circuitry comprises an airborne microwave modem assembly.

15. An aircraft electronic device comprising:

electronic circuitry which generates heat; and

a housing having the electronic circuitry located in the housing, the housing comprising a first wall member with a heat sink section that extends in an outward direction at an outer side of the first wall member, and a connection section located at an inner side of the first wall member, wherein other walls of the housing are attached to the connection section to form an enclosure housing the electronic circuitry, and wherein the first wall member further comprises a flange extending from the connection section which is sized and shaped to be attached to an exterior side of an aircraft,

wherein the electronic circuitry comprises an airborne link interface assembly comprising digital signal encryption and compression electronics.

16. An aircraft electronic device as in claim 11 wherein the flange comprises a perimeter flange which surrounds the connection section, and wherein the flange comprises holes adapted to receive fasteners to attach the flange to the exterior side of the aircraft.

17. An aircraft electronic device comprising:

electronic circuitry which generates heat; and

a housing having the electronic circuitry located in the housing, the housing comprising a first wall member with a heat sink section that extends in an outward direction at an outer side of the first wall member, and a connection section located at an inner side of the first wall member, wherein other walls of the housing are attached to the connection section to form an enclosure housing the electronic circuitry, and wherein the first wall member further comprises a flange extending from the connection section and adapted to be attached to an exterior side of an aircraft,

wherein the connection section of the first wall member comprises a wedge shaped section adapted to have the other walls of the housing located thereon.

18. An aircraft electronic device as in claim 11 wherein the housing, including the first wall member, forms an electromagnetic interference (EMI) shield surrounding the electronic circuitry.

19. An aircraft electronic device as in claim 11 further comprising an electromagnetic interference (EMI) shield surrounding the electronic circuitry, the EMI shield comprising the first wall member.

20. An aircraft comprising:

a drive unit;

an air frame comprising at least one airfoil, the drive unit being attached to the air frame; and

an electronic communications device connected to the air frame, wherein the electronic communications device comprises a printed circuit board and a housing, wherein the housing has a first side section connected at an exterior side of the airfoil to close an access opening through the airfoil, and wherein the first side section of the housing forms a wall of an enclosure for the printed circuit board,

wherein the first side section comprises a heat sink located in the access opening of the airfoil, and wherein the heat sink comprises heat transfer fins extending outward from the airfoil.

21. (Cancelled)

22. (Cancelled)

23. An aircraft as in claim 20 wherein the housing forms an electromagnetic interference (EMI) shield around the printed circuit board.

24. An aircraft as in claim 20 wherein the first side section comprises a perimeter flange with holes therethrough for attaching the first side section to the exterior side of the airfoil.

25. An aircraft as in claim 20 wherein the first side section forms a structural and contour component for the airfoil.

26. A method of assembling an electronic device with an aircraft comprising steps of:

providing the electronic device with a housing having a side with a heat sink;

inserting the electronic device into an access aperture in the aircraft; and

attaching the side of the housing of the electronic device to the aircraft to close the access aperture, wherein the heat sink is located in the access aperture and at an exterior of the aircraft.

27. An aircraft electronic device comprising:

electronic circuitry which generates heat; and

a housing comprising a first wall member and a second wall member, wherein the first wall member comprises a heat sink section and a connection section, wherein the second wall member is attached to the first wall member to at least partially enclose the electronic circuitry in the housing, and wherein the connection section is sized and shaped to be attached to an aircraft with the heat sink section located at an exterior of the aircraft to transfer heat directly from the heat sink section to air passing along the exterior of the aircraft, wherein the heat sink section comprises heat transfer fins extending in an outward direction relative to the exterior of the aircraft.

28. An aircraft component as in claim 1 wherein the first section comprises a perimeter flange with fastener mounting holes therethrough.